Dr Shaheen Khotu

Director

National Health Information System

Chief Information Officer

Department of Health

November 2005

Centurian Lake

DEPARTMENT OF HEALTH
Republic of South Africa

DEPARTMENT OF HEALTH
Republic of South Africa

Context

- ANC Health Plan and the Reconstruction and Development Program (RDP)
- Presidential International Advisory Council on ICT
- Presidential Commission on ISAD
- G8 DOT force & Gleneagles – MDG's
- Focus on Rural Nodes
- Information Society and Development - ISAD

RDP HEALTH PRIORITIES

◆ Restructuring and shifting resources

◆ Nutrition

◆ Maternal and child health

◆ Specific diseases and conditions

◆ Drug and technology procedures

◆ Information and Research

COMMITTEES

- NUTRITION
- MATERNAL AND CHILD HEALTH
- HEALTH FINANCING
- DRUG POLICY
- ACADEMIC HEALTH COMPLEXES
- PUBLIC AND PRIVATE SECTOR MIX
- HUMAN RESOURCES
- NATIONAL HEALTH INFORMATION SYSTEM
- NATIONAL HEALTH LEGISLATION

Strategic Objective:

Develop a

National Health Information System for South Africa (NHIS/SA) that begins at the local level and feeds into district, provincial and national levels, and includes the private and public sectors;

PRIORITY COMPONENT SYSTEMS

◆ ADMINISTRATION AND FINANCE

◆ SURVEILLANCE

Socio - demographic Surveillance
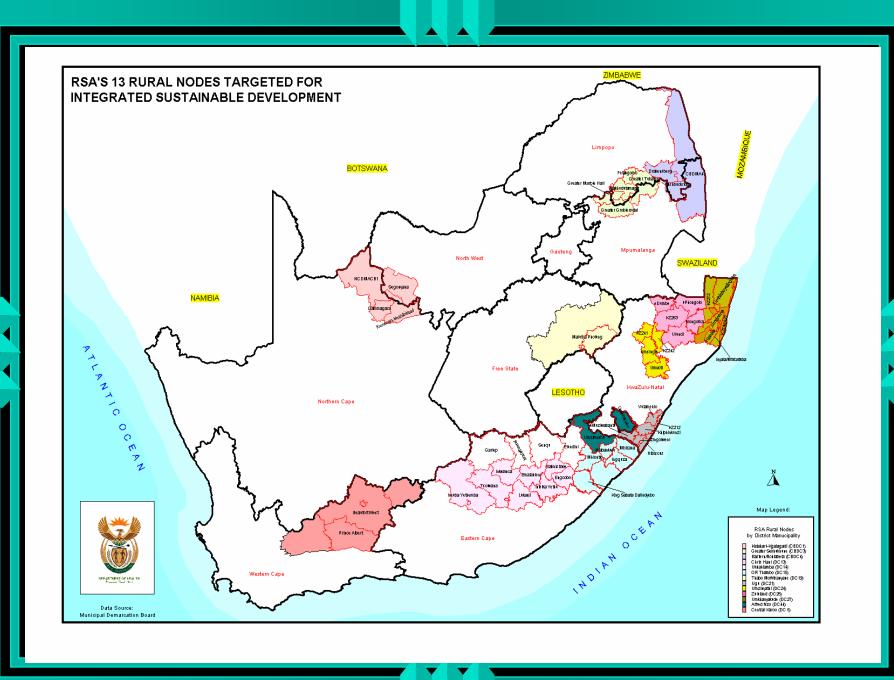
Environmental Surveillance
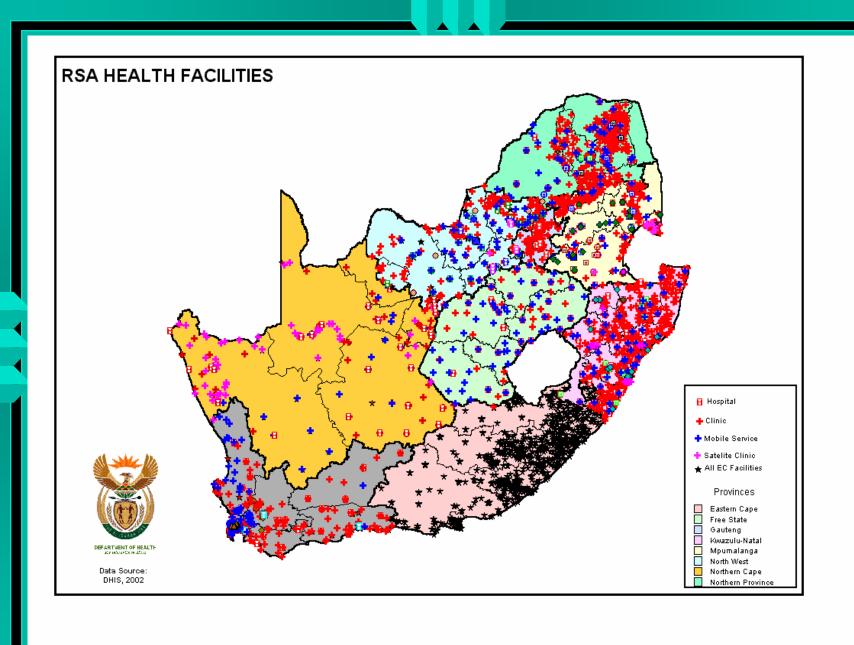
Disease Surveillance

Health Systems Surveillence

Nutritional Surveillance

◆ **ADMINISTRATION AND FINANCE**

Human Resource Management

Financial Resource Management

Facilities Management

Equipment Management

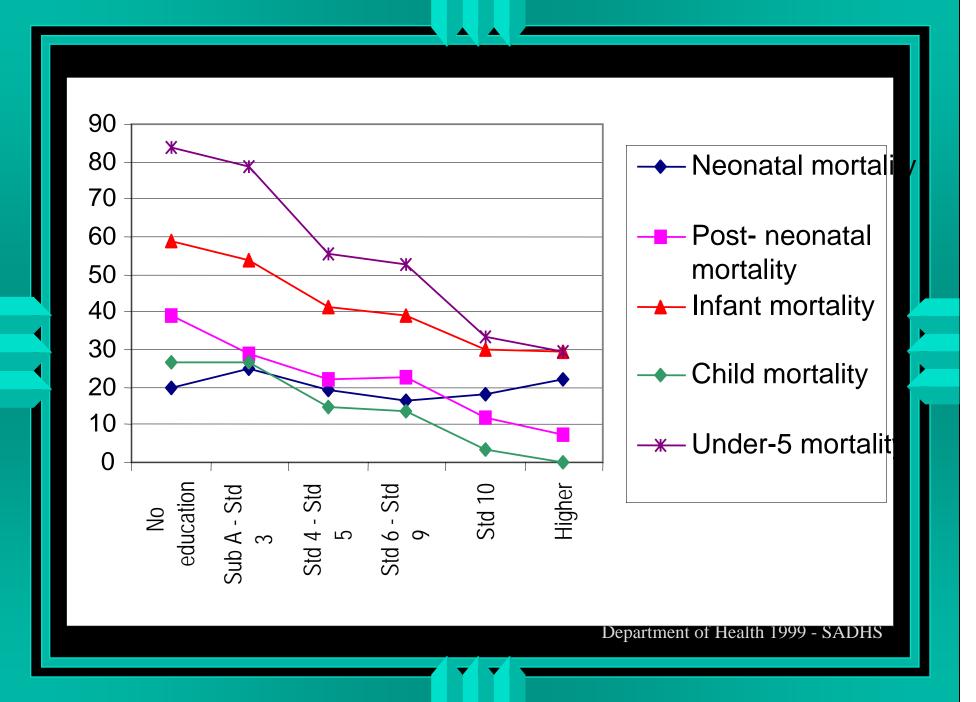**Transport Management**

Pharmaceutical & Other Consumables Mx

NHC / MIS   Patient MIS

RSA'S 13 RURAL NODES TARGETED FOR
INTEGRATED SUSTAINABLE DEVELOPMENT

ZIMBABWE

BOTSWANA

MOZAMBIQUE

NAMIBIA

Limpopo

Fetakgomo
Greater Marble Hall
Greater Tubatse
Greater Tzaneen
CBDMA4

Greater Groblersdal

North West

Gauteng

Mpumalanga

SWAZILAND

NCDMACB1

Segonyana

Gammagara

Kuruman-Mothibistad

Maltha Phofing

eDumbe
iPhongolo

KZ263
Nongoma

KZ241
Uhadi

Umzinyathi
KZ242

Umvoti

KwaZulu-Natal

Iyala/Nkorato

Free State

LESOTHO

Vrilamello

ATLANTIC OCEAN

Northern Cape

Umzimkhulu

Umzimvubu

Kalipihlukuzi
KZ212

Ntabankulu

Mbizana
Ntangokeni

Mhlontlo

Qaukeni

Hibiscus

Garlep
Maluopong
Senqu

Umtata

Intaka

Lukhanji
Emalahleni

Sakhilsiwe

Tsomana

Intaka Yetha

Intata Yethemba

Lukanji

King Sabata Dalindyebo

BeaufortWest

Eastern Cape

Prince Albert

N

Western Cape

INDIAN OCEAN

DEPARTMENT OF HEALTH

Data Source:
Municipal Demarcation Board

Map Legend:

RSA Rural Nodes
by District Manucipality

Kalalani-Kgalagadi (CBDC1)
Greater Sekukhune (CBDC3)
Eastern/Bollabela (CBDC4)
Chris Hani (DC13)
Ukhalamba (DC14)
OR Tiambo (DC15)
Thabo Mofutranyane (DC19)
Ugu (DC21)
Umzinyathi (DC26)
Zuluiad (DC26)
Umkhanyakhde (DC27)
Alfred Nzo (DC44)
Central Karoo (DC 5)

RSA HEALTH FACILITIES

Legend:
- 🏥 Hospital
- ➕ Clinic
- ➕ Mobile Service
- ➕ Satelite Clinic
- ★ All EC Facilities

Provinces:
- Eastern Cape
- Free State
- Gauteng
- Kwazulu-Natal
- Mpumalanga
- North West
- Northern Cape
- Northern Province

DEPARTMENT OF HEALTH

Data Source:
DHIS, 2002

Basic Health Indicators

	IMR	MMR	LIFE EXPECTANCY	
			Male	Female
African	**54,7**	**58**	**60**	**67**
Coloured	**36,3**	**22**	**59**	**65**
Indian	**9,9**	**5**	**64**	**70**
White	**7,3**	**8**	**69**	**79**
				63
TOTAL	**40,2**	**23,3**		
source: DoH	**45,0**	**150**		

Department of Health 1999 - SADHS
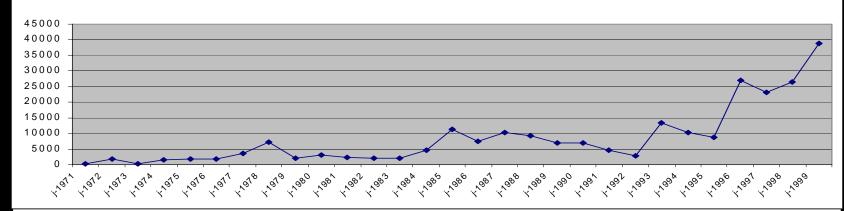
MAIN HEALTH PROBLEMS
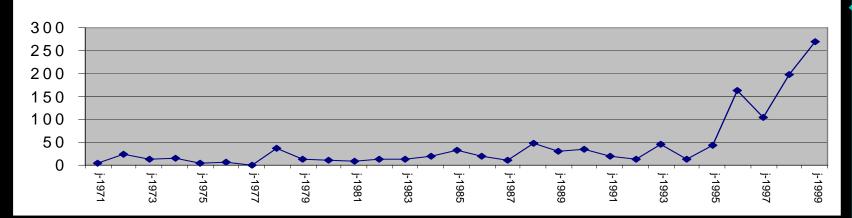
◆ CHILDHOOD DISEASES -

  ie. MEASLES

◆ UNDERNUTRITION

◆ INFECTIOUS DISEASES

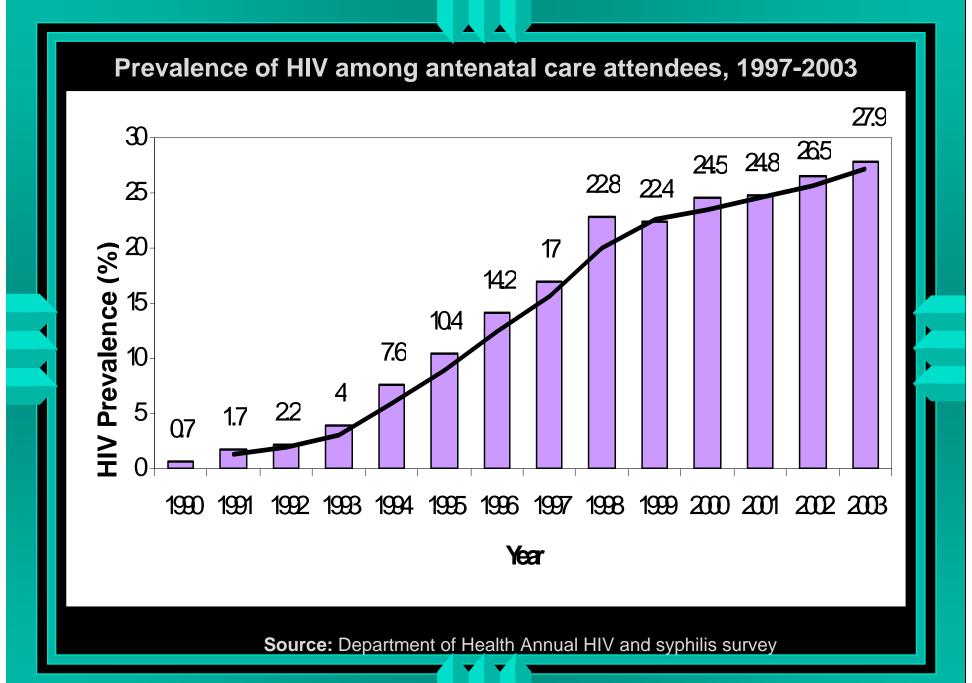 ie. TB / STI / HIV AND AIDS

◆ Diseases of lifestyle – HPT / IHD

Malaria
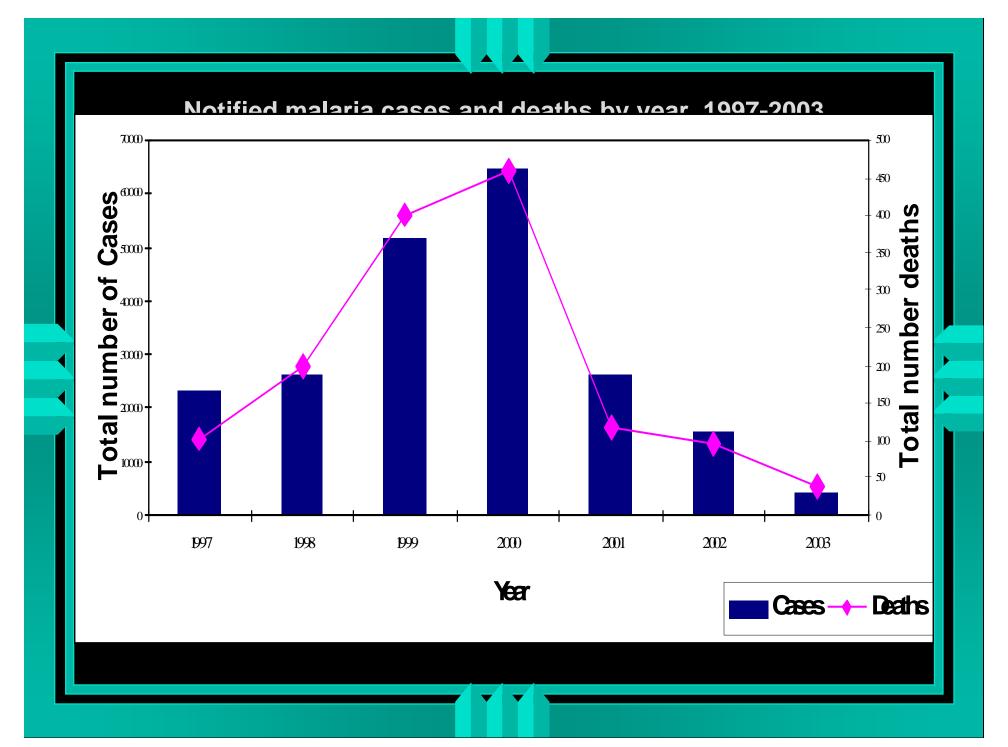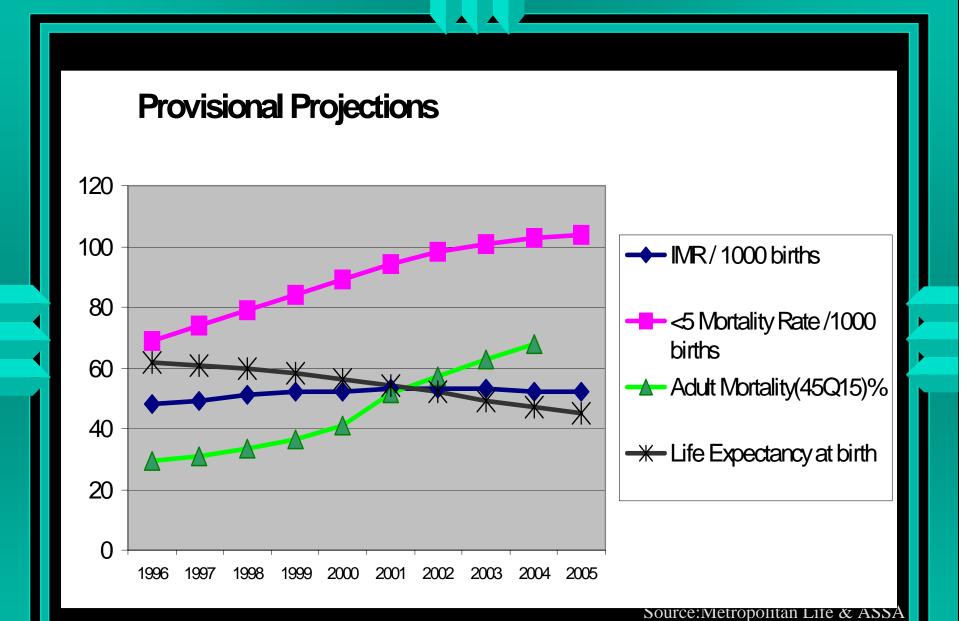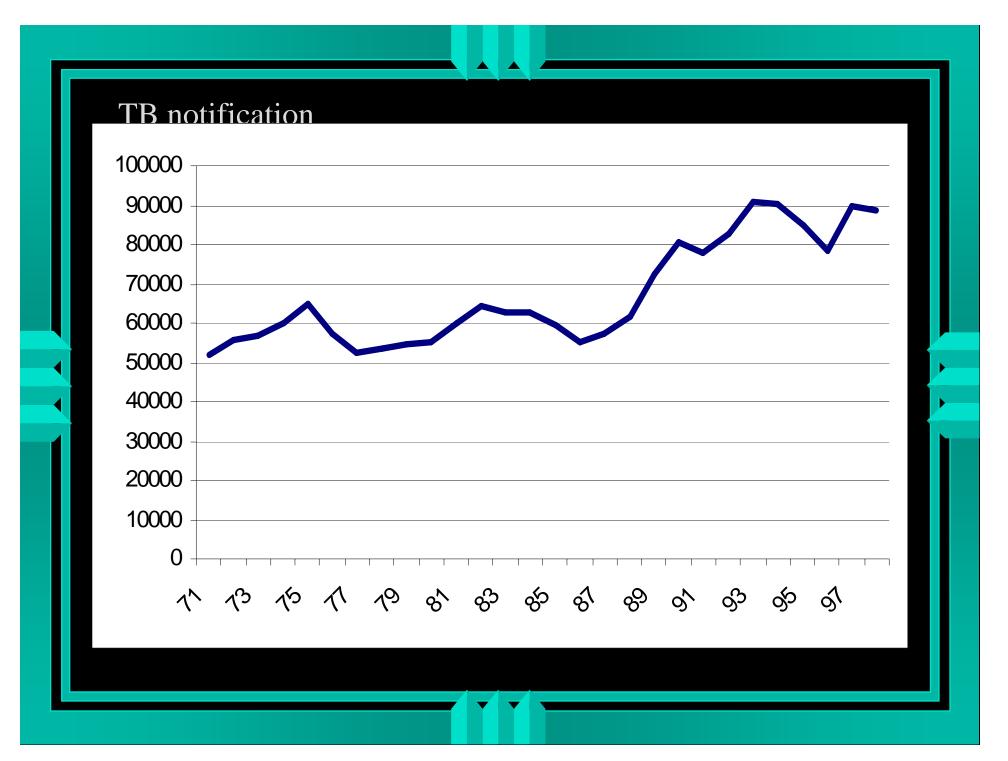
SOURCE: DEPARTMENT OF HEALTH (10 September 1999)

Notified malaria cases and deaths by year, 1997-2003

Provisional Projections

TB notification

Prevalence of HIV among antenatal care attendees, 1997-2003

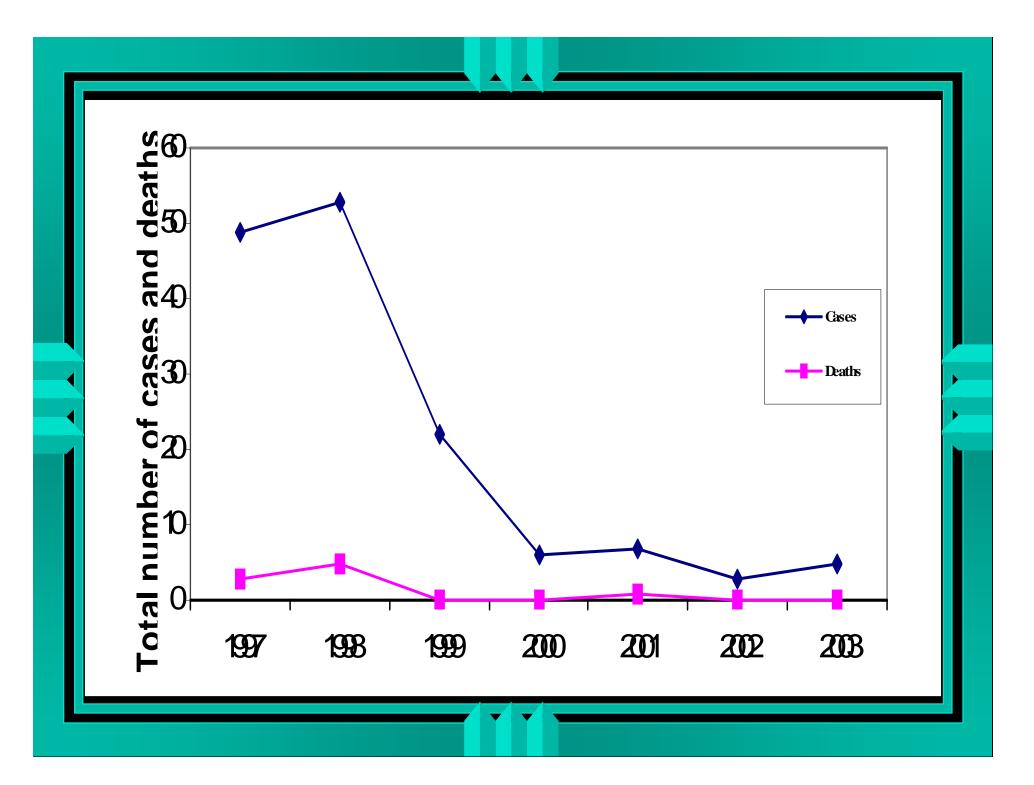Source: Department of Health Annual HIV and syphilis survey
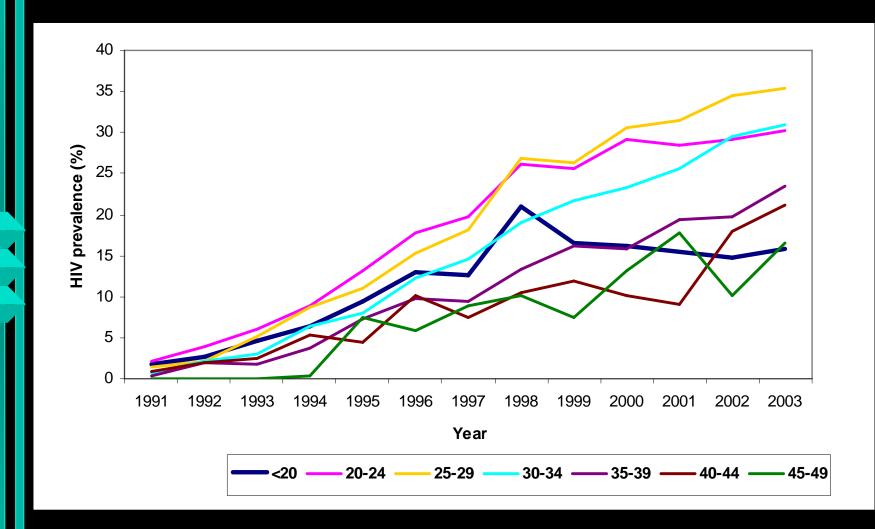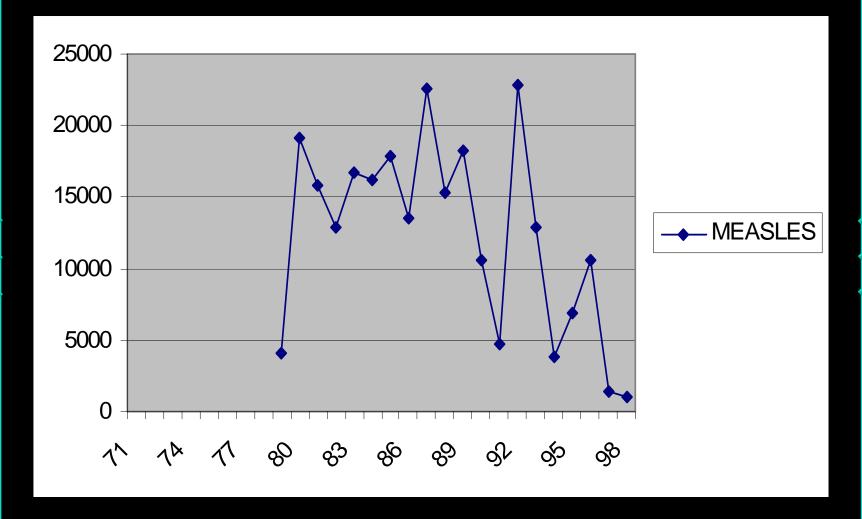
HIV prevalence by age among antenatal clinic attendees, 1991–2003

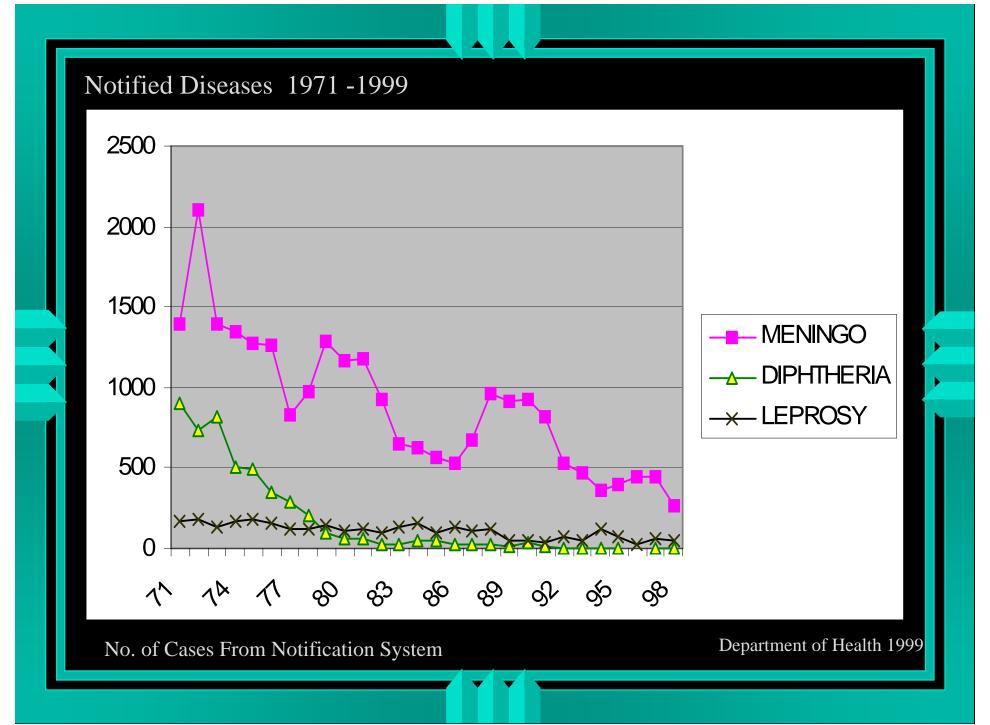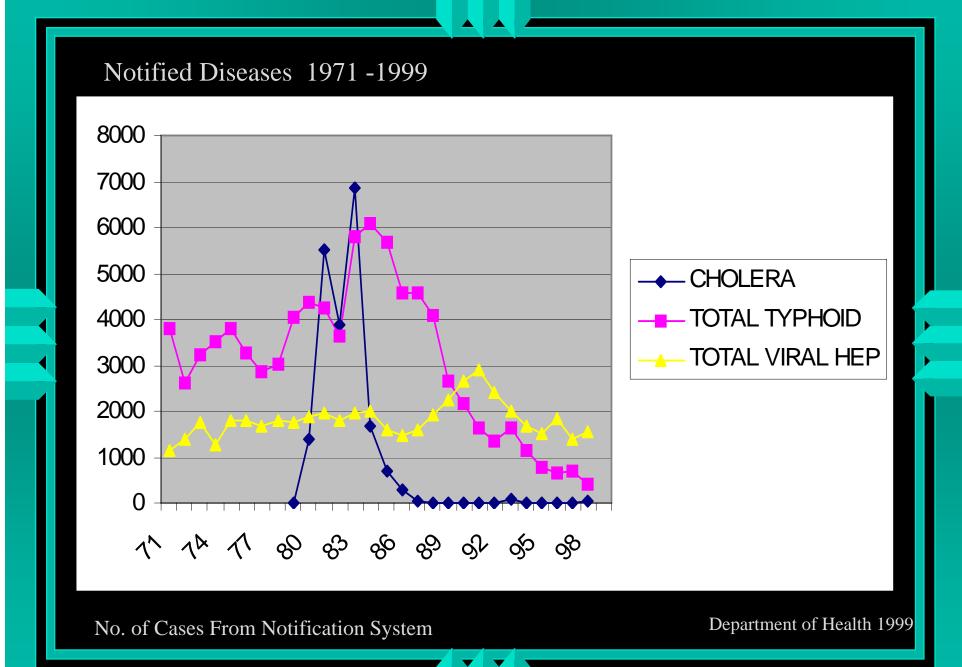**Source:** Department of Health Annual HIV and syphilis survey
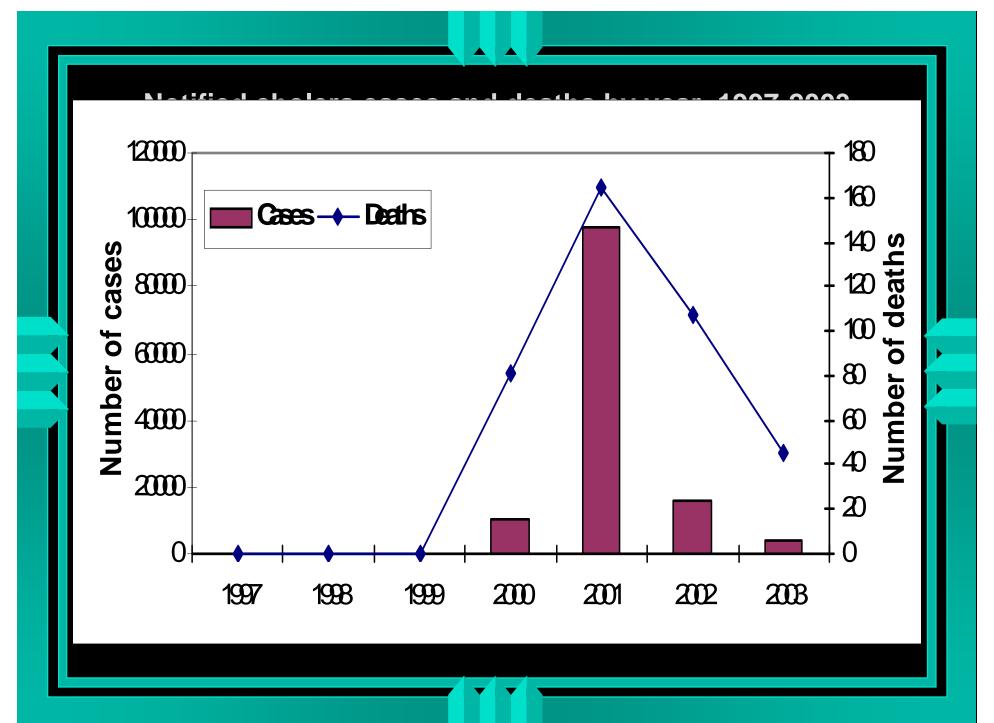
Notified Diseases 1971 -1999

No. of Cases From Notification System
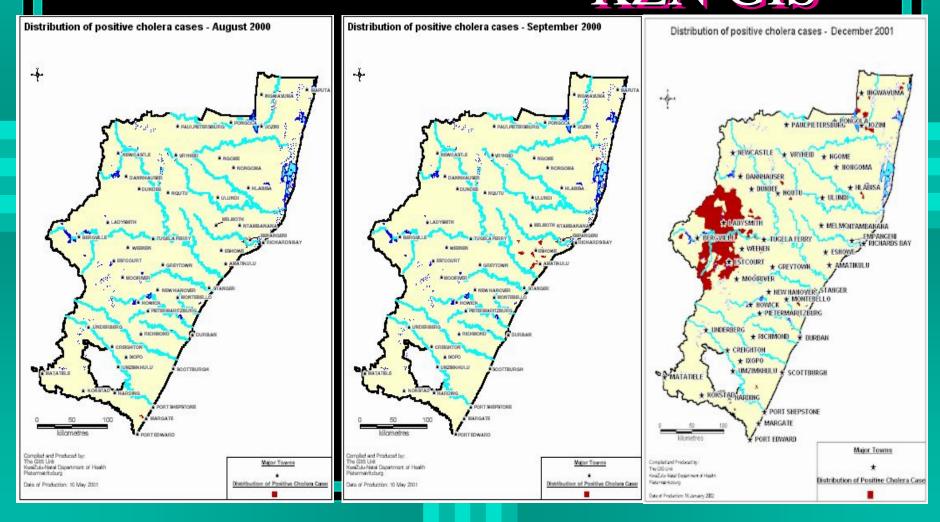
Department of Health 1999

Notified Diseases 1971 -1999

No. of Cases From Notification System

Department of Health 1999

Notified cholera cases and deaths by year, 1997-2003

GIS is a useful tool for revealing trends and may be used in the management of diseases. The maps below illustrate the monthly spread of positive cholera cases since the outbreak in August 2000.

KZN GIS

Distribution of positive cholera cases - August 2000

Distribution of positive cholera cases - September 2000

Distribution of positive cholera cases - December 2001

Common Standards and Protocols

- International classification of diseases – ICD 10
- Procedural Codes (CCPT) and DRG's
- UPFS – uniform billing and;
- EDI standards & XML (HL-7 v.3+)
- Security (eHealth and smart cards)
- ISO 17799
- electronic prescriptions & lab
- Machine Interface
- Terminology - LOINC

NATIONAL HEALTH CARE / MANAGEMENT INFORMATION SYSTEM
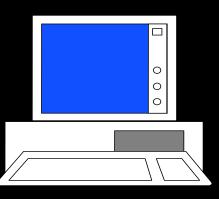
NHC/MIS

NHIS/SA

Dept of Health

MODULAR

Five core MODULES

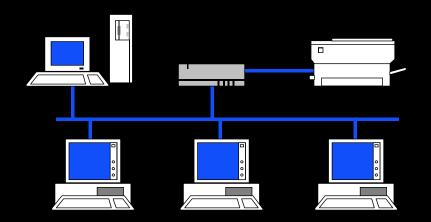- Patient registration
- Minimum record
- Patient billing
- Appointment scheduling
- Clinical pharmacy
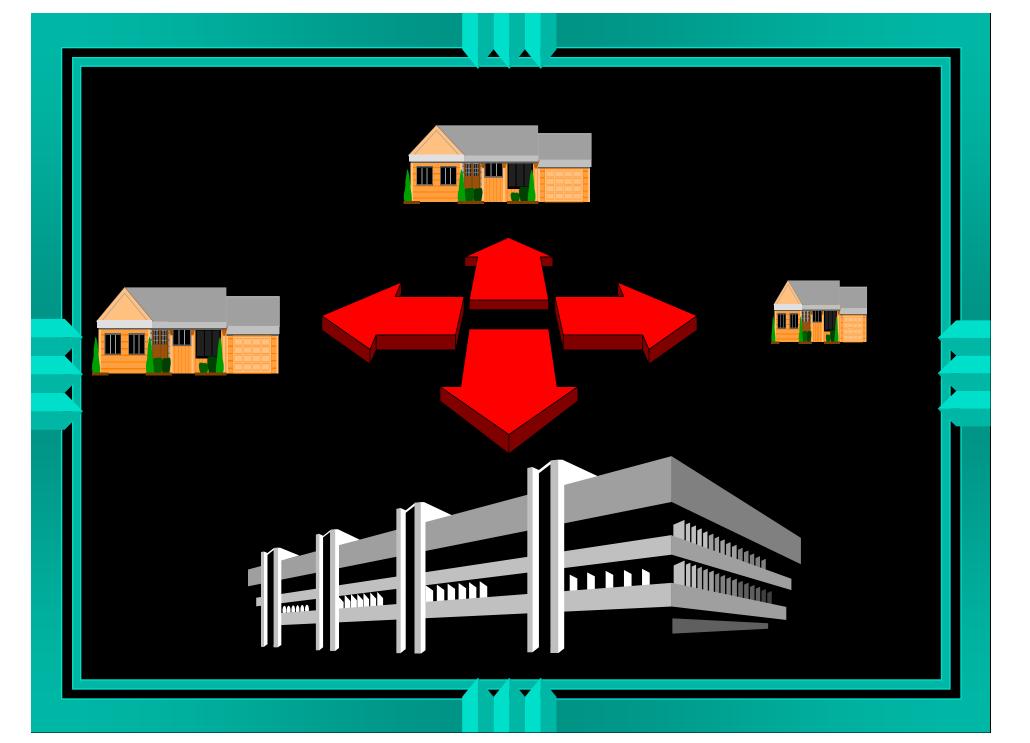
Major Considerations
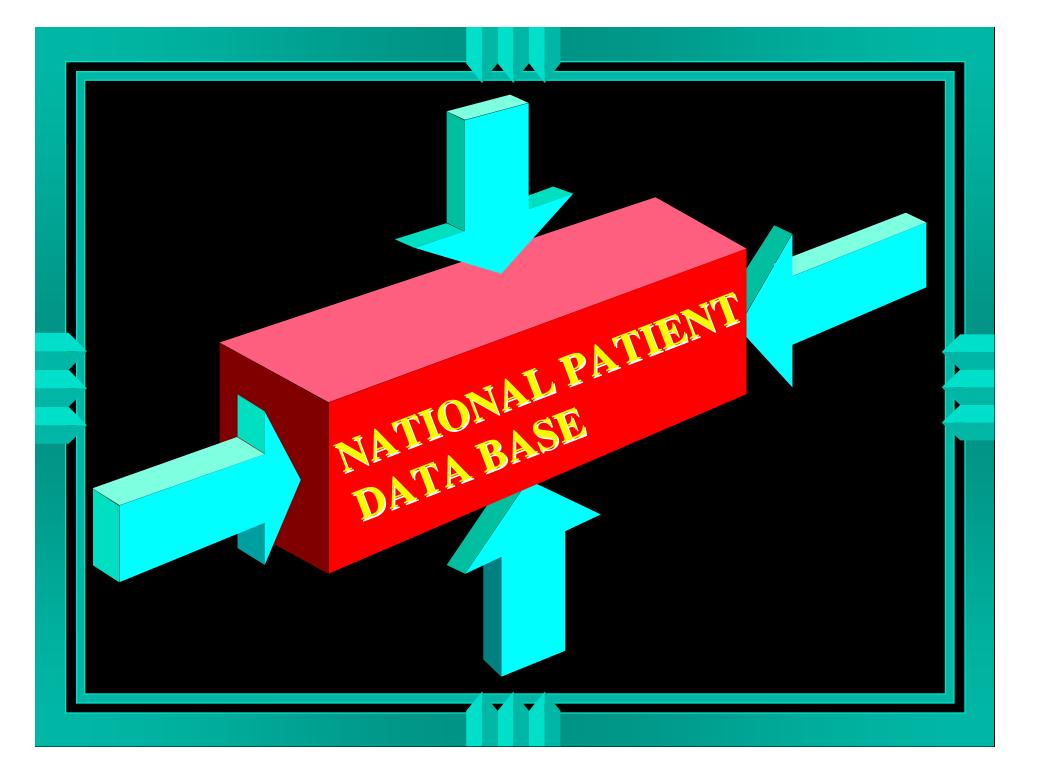
- Proven
- Modern
- Scaleable
- 4 GL
- GUI
- Modular
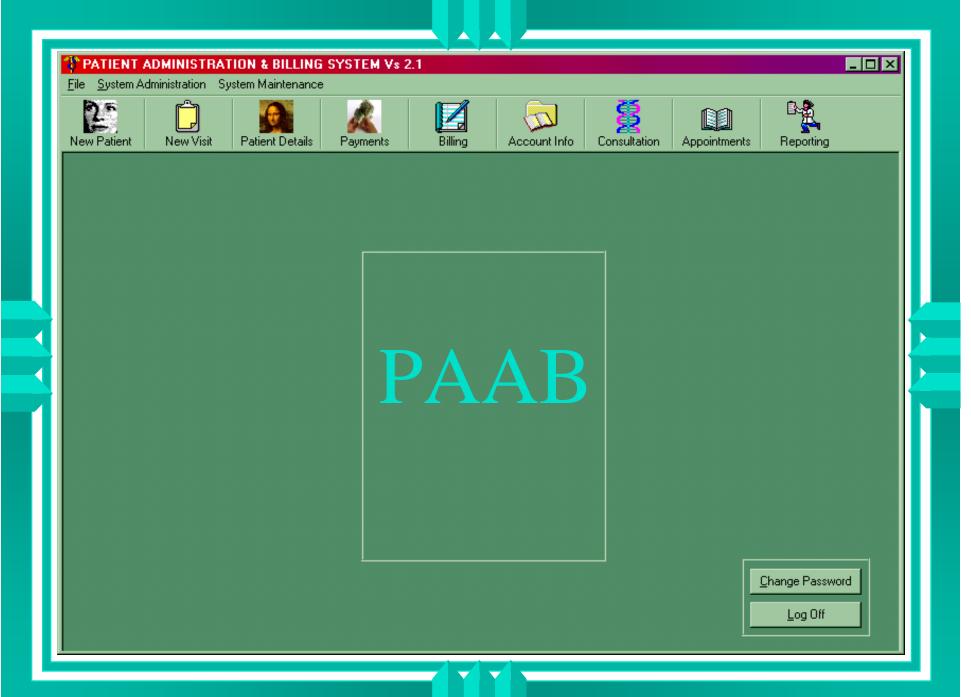
'Enabling tools'

- Unique identifier / National ID
- ICD-10 / socio-demography
- Minimum,core of a medical record
- National patient data base (MPI)
- Essential drug list / supply
- Network (joint infrastructure)

PATIENT ADMINISTRATION & BILLING SYSTEM Vs 2.1

File   System Administration   System Maintenance

| New Patient | New Visit | Patient Details | Payments | Billing | Account Info | Consultation | Appointments | Reporting |

PAAB

Change Password

Log Off
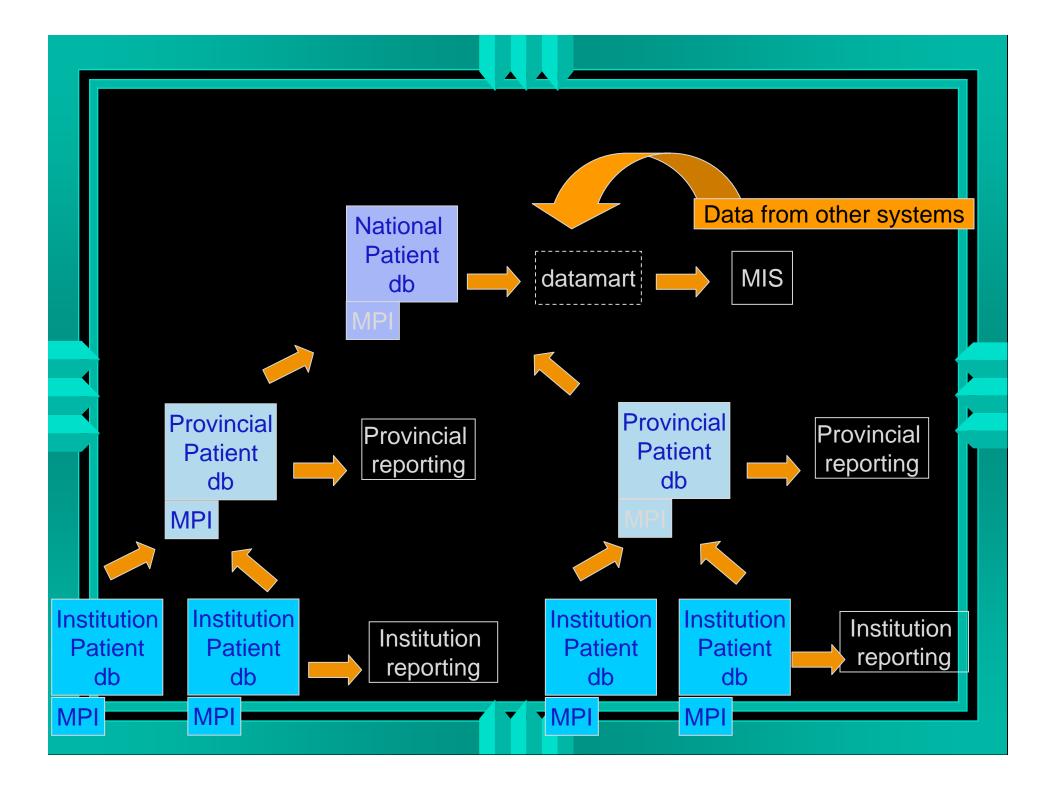
Chronic Disease Module
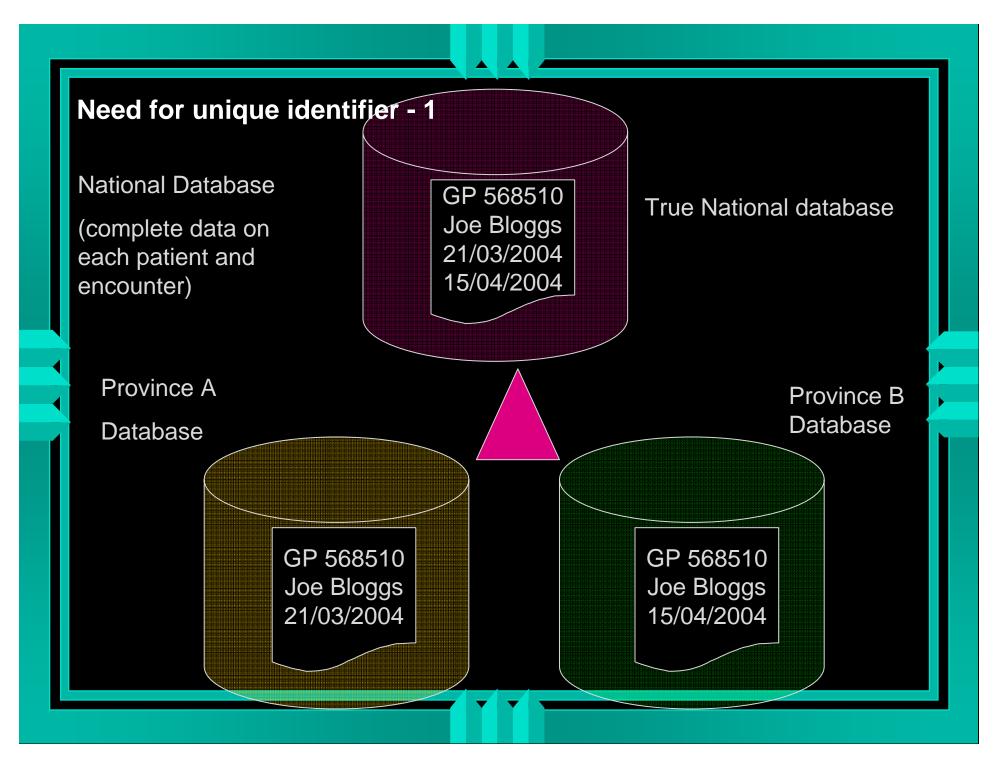
◆ As part of the Comprehensive HIV and AIDS Plan,

◆ a Patient Information System (PIS) is required for monitoring and evaluation.

◆ In order to provide a short-term solution whilst an Electronic Health Record Solution for the country is being procured, a decision was taken to develop a module to cater for the Comprehensive Plan.
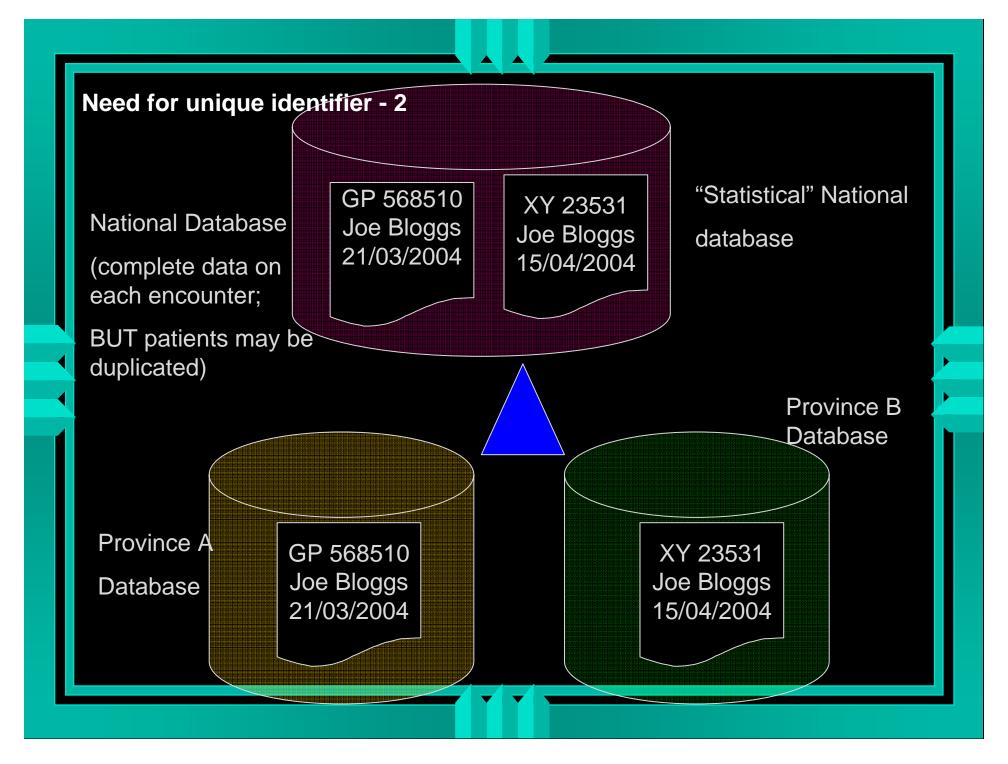
- The module was developed within two Patient Information Systems that are currently running,
  - Medicom and PAAB systems (23 sites).
- The development, which was commissioned through SITA, started in March 2004.
- The approach taken was to first demonstrate the module in a few sites before a full implementation in all the accredited sites.
- Achieved a Master Patient Index, and
- Web Based her across two provinces, access using fingerprint and patient consent

Technical design issues

◆ One Database

◆ Open source

◆ Flexible approach to deployment

  • Enterprise-wide or stand-alone

◆ Lower training costs

◆ Lower maintenance costs

◆ Avoid integration costs

Need for unique identifier - 1

National Database

(complete data on each patient and encounter)

GP 568510
Joe Bloggs
21/03/2004
15/04/2004

True National database

Province A

Database

GP 568510
Joe Bloggs
21/03/2004

Province B
Database

GP 568510
Joe Bloggs
15/04/2004

Need for unique identifier - 2

National Database

(complete data on each encounter;

BUT patients may be duplicated)

GP 568510
Joe Bloggs
21/03/2004

XY 23531
Joe Bloggs
15/04/2004

"Statistical" National

database

Province B
Database

Province A

Database

GP 568510
Joe Bloggs
21/03/2004

XY 23531
Joe Bloggs
15/04/2004

- General lack of buy-in from users at facility level
- Delay in the finalization of national indicators
- Change management was not a priority of this project - Site readiness problems
- Hospital's internal processes not ready
- Backlog estimated to be approximately 10 000 patient files.
- Overcoming the current backlog of ARV files still constitutes a major challenge.
- The existence and use of NGO systems has led to resistance to accept the new systems
- Shortage of dedicated personnel to effectively utilize the ARV monitoring systems.
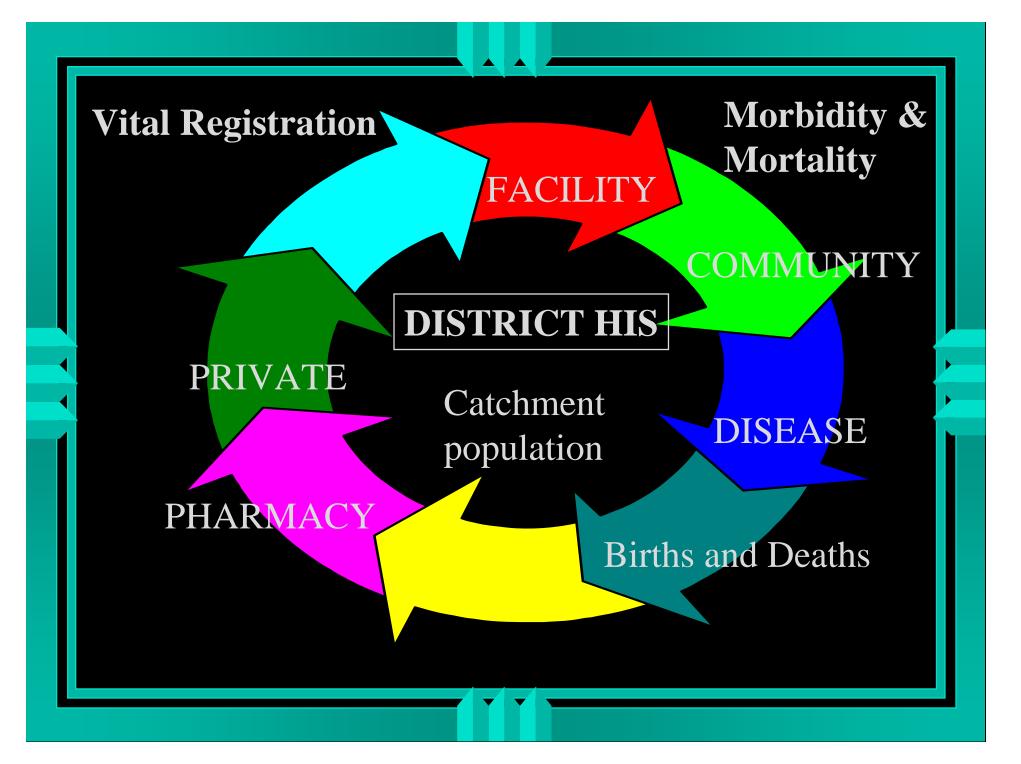
Rollout Statistics
Usage till October 2005 (18 sites in 4 provinces)
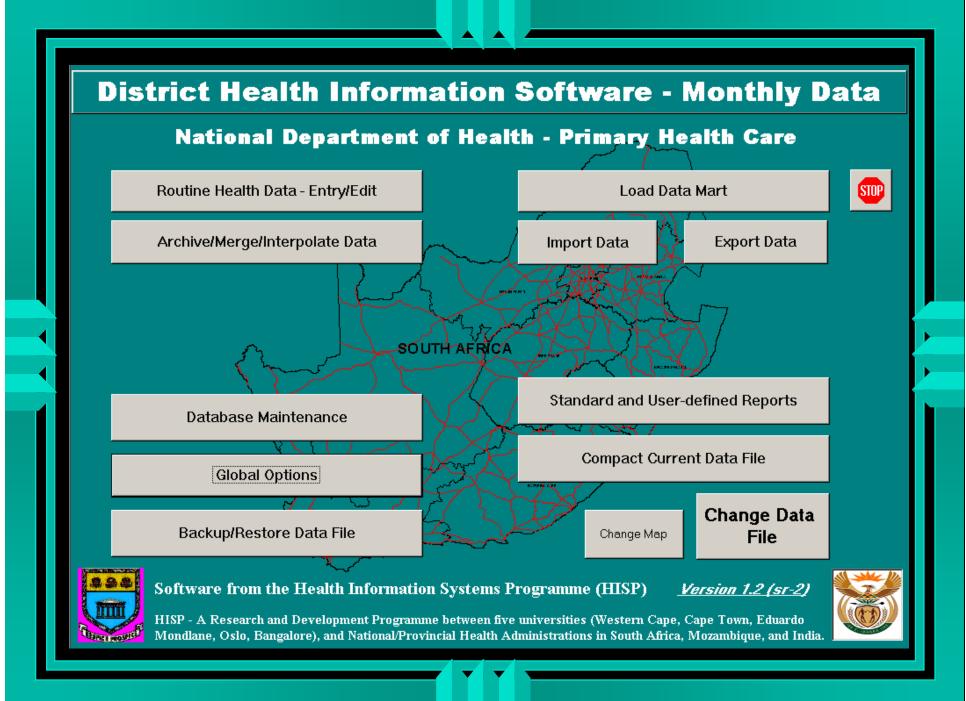
Province	No of ARV patients Registered on the system	No of ARV visits Registered on the system	No of users trained
Mpumalanga	1591	6040	66
Limpopo	2003	5575	111
N. West	1683	3100	24
KZN	1050	1050	48
Total	**6327**	**15765**	**249**

PHIS

one stop SHOP

surveillance

INTER SECTORAL

HR

NHC/MIS

districts

outcome

finance

Hospitals

DHIS

- ◆ District Health Information System launched in (1998)
  - • 4 153 public clinics and all private and public hospitals collect information on 180 national health indicators
  - • Manual data is compiled monthly from health facilities, captured electronically at the district level, that feeds into province then national
  - • National Data Dictionary for all elements
  - • Indicators include utilization rates, pre-natal visits, growth monitoring, diarrhea, immunization rates, sexually transmitted infections, and condom utilization
- ◆ A birth and death registration project was launched and has reached 60% for births and 98% for deaths

District Health Information Software - Monthly Data

National Department of Health - Primary Health Care

Routine Health Data - Entry/Edit

Load Data Mart

STOP

Archive/Merge/Interpolate Data

Import Data

Export Data

SOUTH AFRICA

Database Maintenance

Standard and User-defined Reports

Global Options

Compact Current Data File

Backup/Restore Data File

Change Map

Change Data File

Software from the Health Information Systems Programme (HISP)   *Version 1.2 (sr-2)*

HISP - A Research and Development Programme between five universities (Western Cape, Cape Town, Eduardo Mondlane, Oslo, Bangalore), and National/Provincial Health Administrations in South Africa, Mozambique, and India.

Improvements in

Efficiency	Economy	Impact
Waiting time reduced from hours to 16 minutes Lost files reduced	• Optimal utilization of existing resources. • • Revenue collection –UPFS • • Less paper, stationary	Rapid file retrieval Elimination of duplication Pathology

INTEGRATION

PHARMACEUTICAL OTHER SUPPLIES

FACILITIES EQUIPMENT
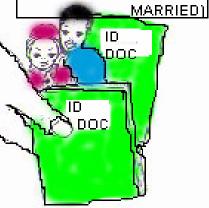
NHC/MIS

FINANCE

HUMAN RESOURCES

NOTICE

ALL PREGNANT MOTHERS MUST REGISTER THEIR BABIES FREE AT THE HOSPITALS WHERE THEY GIVE BIRTH (DELIVER)

1. WHEN GOING TO THE CLINIC CARRY YOUR ID DOCUMENT(AND YOUR HUSBAND'S IF YOUR MARRIED)

ID DOC

ID DOC

MATERNITY WARD

NAME

2. WHEN GOING TO DELIVER COME KNOWING THE BABY'S NAME (NOT THE NICKNAME)

3 A birth notification form can be obtained from dept. of HOME AFFAIRS

DEPARTMENT HOME AFFAIRS

BIRTH CERTIFICATE

Province	(a) Estimate	Registered Births CSS	% Registered	Health Service	% recorded in Health Service
Western Cape	90,040	55,745	62	76,120	85
Eastern Cape	218,733	19,035	9	115,328	53
Northern Cape	20,827	10,990	53	12,482	60
Free State	91,149	18,071	20	97,740	107
KwaZulu Natal	279,576	34,251	12	181,317	65
North West	113,230	7,242	6	52,714	47
Gauteng	195,006	76,933	39	72,269	37
Mpumalanga	96,869	11,138	11	67,552	70
Northern	178,004	6,931	4	97,290	55
South Africa	1,283,434	240,336	18.73	772812	60.21

1 Estimated births based on 1994 ASFRs and female population estimates based on 1991 Census figures adjusted for undercount. CCS Report No. 03-01-26
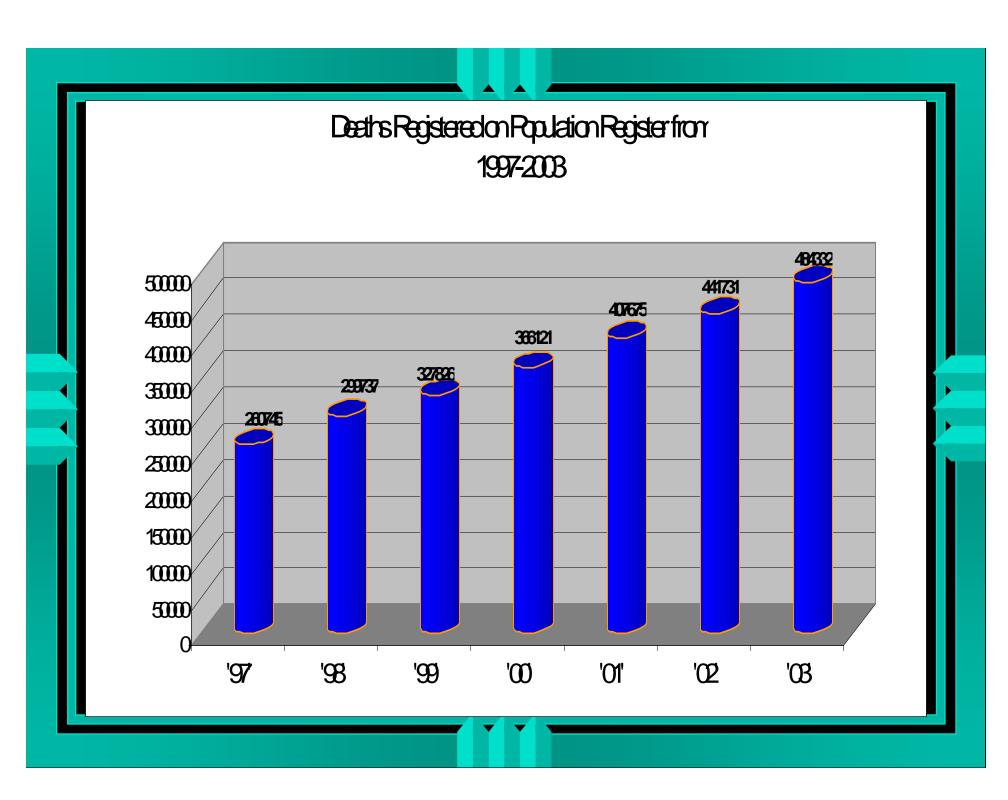2 Local Authority
3 ReHMIS

Province	(a)1994 Estimate	(b)1994 Deaths	% Registered
Western Cape	33 091	27 872	84
Eastern Cape	72 626	19 370	27
Northern Cape	6 972	12 066	173
Free State	26 241	21 504	82
KwaZulu Natal	89 211	38 330	43
North West	35 671	10 184	29
Gauteng	71 996	51 750	72
Mpumalanga	26 363	14 104	53
Northern	50 334	12 491	25
South Africa	412 505	207 671	50.34

(a) Age-sex-race- specific death rates based on life tables derived by Arriaga. US Census Office.
and applied to 1994 provincial population estimates form the
Demographic Information Bureau, Pretoria
(b) There were 2009 deaths which had no provincial classification

Deaths Registered on Population Register from 1997-2003

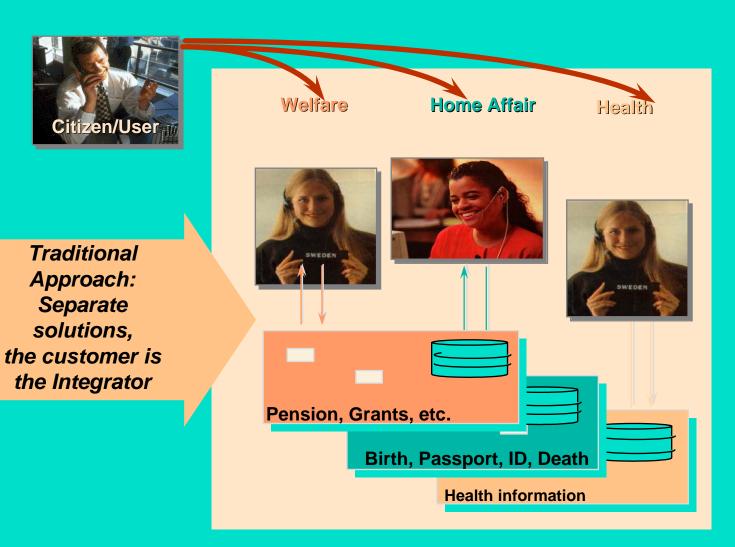| Year	Value
'97	26745
'98	29737
'99	32786
'00	36121
'01	40675
'02	44731
'03	48432

E-Government must be understood within the context of National Challenges

- Poverty eradication
- Job Creation
- Safety & security
- Housing
- Health & Social Development
- Education
- Water, electricity & Sanitation
- Economic growth & Redistribution
- Bridging the digital divide
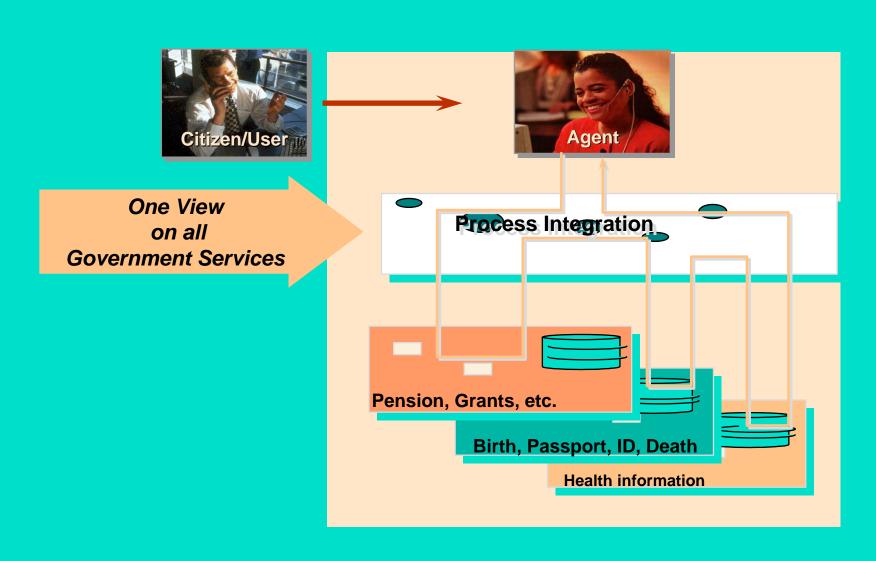- Peace and economic stability and growth in Africa

E-GOVERNMENT VISION

◆ Seamless service delivery;

◆ Improved access to better quality services;

◆ Citizen and business-centric - focused on the needs of the recipient and not the structural logic of government;

◆ Based on life-cycle events;

◆ Multiple points of access, either directly or through intermediaries, using the full range of available technology - creation of an on-line Gateway with appropriate institutional support

CURRENT - SLOW DISINTEGRATED SERVICE

Citizen/User

Welfare   Home Affair   Health

Traditional Approach: Separate solutions, the customer is the Integrator

Pension, Grants, etc.

Birth, Passport, ID, Death

Health information

INTEGRATED CUSTOMER SERVICE - IDEAL

Citizen/User

Agent

**One View
on all
Government Services**

Process Integration

Pension, Grants, etc.

Birth, Passport, ID, Death

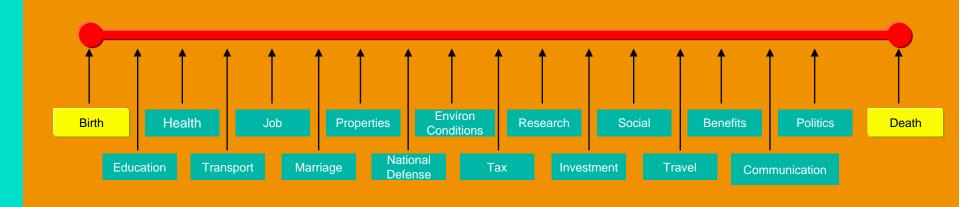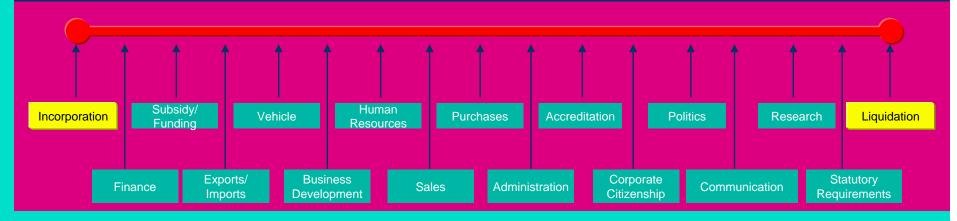**Health information**

Integrated Service Delivery -
around Life events of natural/legal persons

Examples of key areas in a citizen's life that will require interaction with a Government Organisation.

Birth | Health | Job | Properties | Environ Conditions | Research | Social | Benefits | Politics | Death

Education | Transport | Marriage | National Defense | Tax | Investment | Travel | Communication

Examples of key areas in a Business' life that will require interaction with a Government Organisation.

Incorporation | Subsidy/ Funding | Vehicle | Human Resources | Purchases | Accreditation | Politics | Research | Liquidation

Finance | Exports/ Imports | Business Development | Sales | Administration | Corporate Citizenship | Communication | Statutory Requirements

Source : Team Analysis

Components of the Smart ID card

Private keys are processed only inside the card -> keys cannot be copied or compromised

Smart ID card will implement multiple applications

South African smart ID card

Biometric authentication used for card holder authentication - only authorised person can use the card

Smart ID card can be use for e-commerce and e-governmentl

Smart card is portable - electronic identity can be used everywhere

Smart ID card can be used in a variety of terminals

DoH's Data Items

- Minimum patient record:
  - ID Verification
  - Blood group
  - Allergies
  - Donor Status
  - Last 10 diagnosis, treatment, prescriptions
  - Medical Aid
  - E-Purse Pilot?

STANDARDS

○ Security – Legislation: Electronic Communications and Transactions Act – No, 23708

○ Non repudiation & archiving

○ Digital Signatures

  ○ Able to identify user

  ○ Under the control of the user

  ○ Linked to the user and the message

○ Digital certificates Post Office

E-Legislation

Corporate Governance & e-governance

King II / PFMA

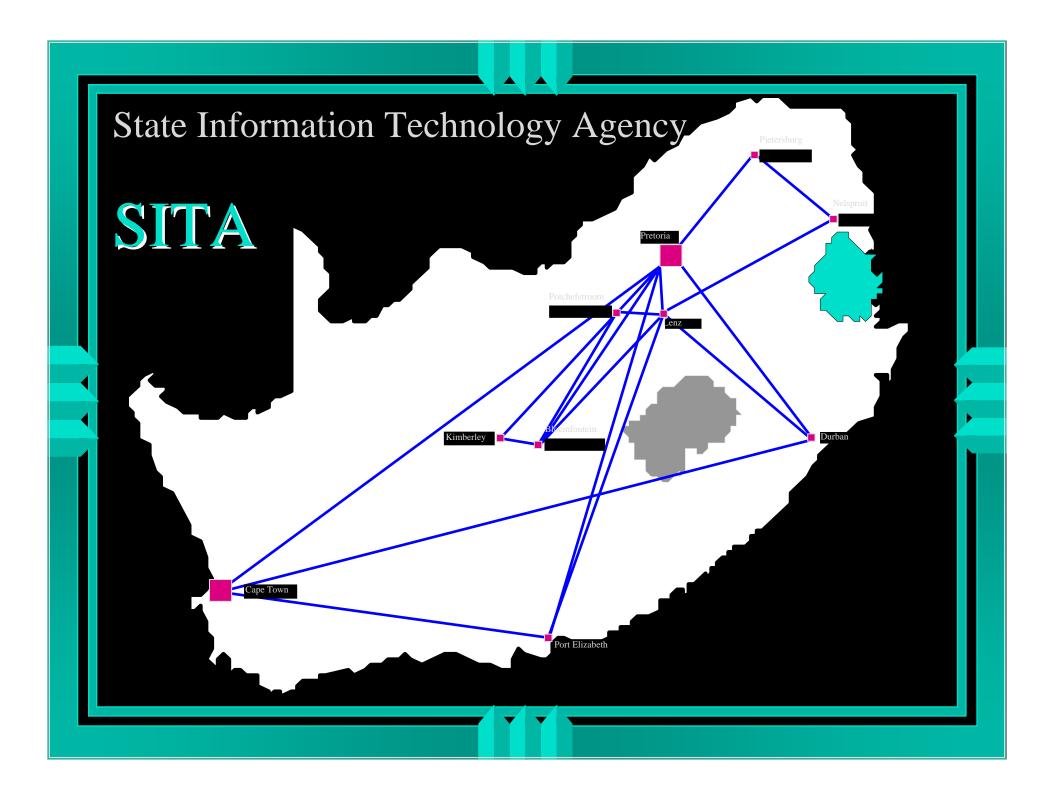**Peer Review – periodic (Nepad)**

Critical Databases

Consumer Protection

Authentication & Accreditation

ZA – Domain Name Authority

Cyber-crime and Inspectorate

Introducing to the
South African public
& the IT industry

SITA

State Information Technology
Agency (Pty) Ltd

Government On-line...

State Information Technology Agency

SITA

Pietersburg

Nelspruit

Pretoria

Potchefstroom

Lenz

Kimberley

Bloemfontein

Durban

Cape Town

Port Elizabeth

TeleHealth is the management and support of national and international health, by audio, visual and data communications.
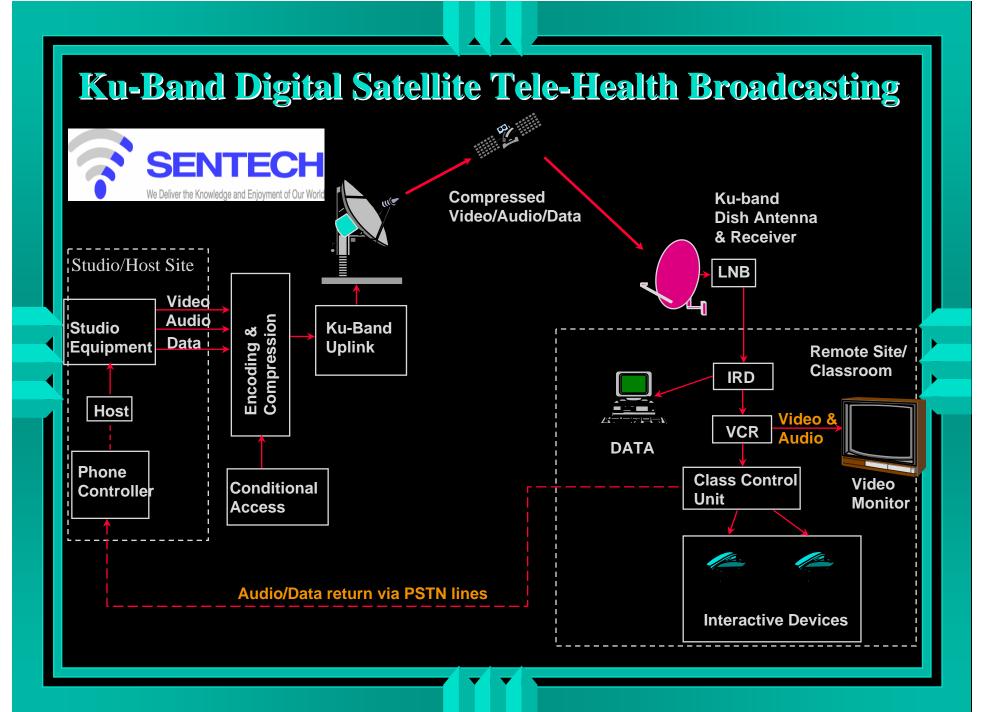
This includes:

- the delivery of health care;

- access to repositories of knowledge, applications & literature;

- the management of health care institutions;

- the education of the public; basic and continuous education;

- the surveillance of diseases and services;

- health emergencies and hazards; and research.

Health Channel

◆ The Closed Health Broadcast Channel shows capability of reaching the most rural communities

◆ An important tool for health promotion and education to rural communities

◆ Expanded from initial 30 to 56 sites

◆ Current expansion to all 100 accredited ART sites and all hospitals in Gauteng

Closed Health Broadcast Channel

Ku-Band Digital Satellite Tele-Health Broadcasting

SENTECH
We Deliver the Knowledge and Enjoyment of Our World

Compressed Video/Audio/Data

Ku-band Dish Antenna & Receiver

LNB

Studio/Host Site

Studio Equipment

Video
Audio
Data

Encoding & Compression

Ku-Band Uplink

Host

Phone Controller

Conditional Access

Remote Site/ Classroom

IRD

DATA

VCR

Video & Audio

Class Control Unit

Video Monitor

Interactive Devices

Audio/Data return via PSTN lines

Healthcare worker content

Mindset's comprehensive data management system

Mindset runs a comprehensive data management system, which serves as a central repository of resources and information and can be accessed through the Mindset and Activate Website

Mindset Database

Mindset Website

Activate Website

Health Channel

◆ The Channel received an Innovative Partnerships Award for service delivery from Centre for Public Service Innovation in August 2004.

◆ The Minister formally launched the Channel on the 10th September 2004.

Cellular Coverage
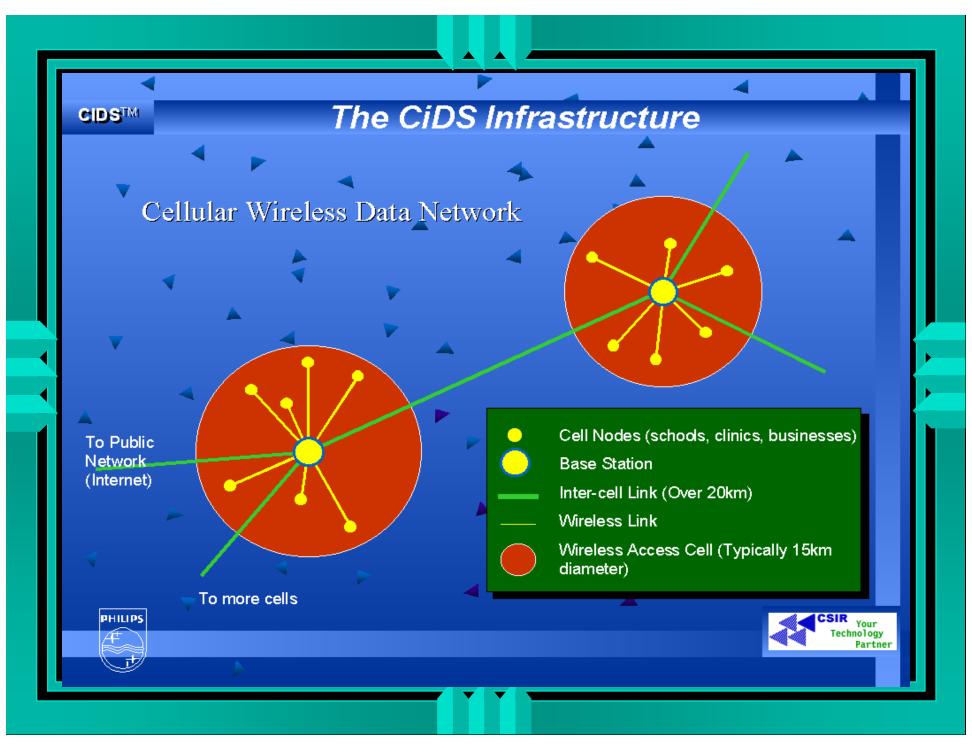
Vodacom Coverage   MTN Coverage

Cellular coverage appears to penetrate most populated regions

Internet and land line connections are less predictable

Information Kiosk

It's :

For you

For me

For us

For the community

Amongst Other Information Available :

Government Vacancies

Health Awareness Promotion

Department of Health Activities

And many more…

extending network in three phases over the next three years (30 per year)

SMS FLOWCHART – TECHNICAL DIAGRAM

WHO Urges Member States

- Long term strategic plans, including legal, infrastructure and public / private partnerships

- Develop infrastructure and ensure universal access

- Build collaboration between private and public sectors, also the NGO sector

- Support for: health care delivery, service improvement, information to citizens, capacity building and surveillance.

- Consider establishing and implementing national public health information systems and to;

- Improve by means of information, the capacity of surveillance of, and rapid response to, disease and public health emergencies

- Endeavor to reach local communities, including vulnerable groups with appropriate eHealth services to their needs.

- Evidence based eHealth standards and norms, to evaluate and share knowledge of cost effective models, ensuring quality,safety and ethical standards.

- Establish national centres and networks of excellence for eHealth best practice, policy coordination and technical support.

NEPAD

- Reduce the burden of disease and the equity gap,
- The Digital Divide or the Digital Donga
- Provide health education to all schools
- Focus on Youth and Women

Presidential National Commission on Information Society and Development

◆ ".… The struggle to eradicate poverty and underdevelopment in our own country is fundamental to the achievement of our national goal to build a caring and people-centered society"

President Thabo Mbeki

State of the Nation Address 2002